



## Advance directives and mortality rates among nursing home residents in Taiwan: A retrospective, longitudinal study



Hsiu-Hsin Tsai<sup>a,b</sup>, Yun-Fang Tsai<sup>a,c,d,\*</sup>, Chia-Yih Liu<sup>b,e</sup>

<sup>a</sup> School of Nursing, College of Medicine, Chang Gung University, Tao-Yuan, Taiwan

<sup>b</sup> Department of Psychiatry, Chang Gung Memorial Hospital, Tao-Yuan, Taiwan

<sup>c</sup> Department of Nursing, Chang Gung University of Science and Technology, Tao-Yuan, Taiwan

<sup>d</sup> Department of Psychiatry, Chang Gung Memorial Hospital, Keelung, Taiwan

<sup>e</sup> Department of Medicine, Chang Gung University, Tao-Yuan, Taiwan

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### ABSTRACT

**Background:** No data-based evidence is available regarding the best time for nursing home nurses to obtain residents' signatures on advance directives, especially for do-not-resuscitate directives, the most common type of advance directive. This information is needed to enhance the low prevalence of advance directives in Asian countries.

**Objectives:** The purposes of this study were to understand (1) the timing between nursing home admission and signing a do-not-resuscitate directive, (2) the factors related to having a do-not-resuscitate directive, and (3) the association between having a do-not-resuscitate directive and nursing home residents' mortality in Taiwan.

**Design:** Retrospective, longitudinal design.

**Setting:** Six nursing homes in Taiwan.

**Participants:** Nursing home residents ( $N = 563$ ).

**Methods:** Data were collected by retrospective chart review with 1-year follow-up. Factors related to having a do-not-resuscitate directive were analyzed by multiple logistic regression, while associations between signing a do-not-resuscitate directive (resuscitation preference) and mortality were examined by Cox proportional hazard regression models.

**Results:** The mean interval between nursing home admission and signing a do-not-resuscitate directive was 840.65 days (2.30 years), which was longer than the time from admission to first transfer to hospital (742.4 days). Having a do-not-resuscitate directive was related to whether the resident had a nasogastric tube (odds = 2.57) and the number of transfers to hospital (odds = 1.18). Among the 563 residents, 55 (9.77%) had died at the 1-year follow-up. Having a do-not-resuscitate directive was associated with a greater risk of death (unadjusted hazard ratio, 2.03; 95% confidence interval, 1.10–3.98;  $p = 0.02$ ), but this risk did not persist after adjusting for age (hazard ratio, 1.89; 95% confidence interval, 0.99–3.59;  $p = 0.05$ ).

**Conclusion:** Early research recommendations to sign an advance directive, particularly a do-not-resuscitate order, on nursing home admission may not be the best time for Chinese nursing home residents. Our results suggest that the best time to sign a do-not-resuscitate directive is as early as possible and no later than 2 years (742 days) after admission if residents had not already done so. Residents on nasogastric tube feeding should be particularly targeted for discussions about do-not-resuscitate directives.

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### What is already known about this topic?

- Advance directives, even do-not-resuscitate directives that are common in western countries, are not widely used in Asian countries.

- Information is lacking to help understand the process and timing of signing do-not-resuscitate directives and their outcomes in Asian nursing homes.

### What this paper adds

- The optimum time for Taiwanese nursing homes to mediate with residents and their families to sign a do-not-resuscitate directive is before 2 years (742 days) after admission if they had not already done so.

\* Corresponding author at: School of Nursing, College of Medicine, Chang Gung University, 259, Wen-Hwa 1st Road, Kwei-Shan, Tao-Yuan, 333, Taiwan.  
E-mail address: [yftsai@mail.cgu.edu.tw](mailto:yftsai@mail.cgu.edu.tw) (Y.-F. Tsai).

- Residents on nasogastric tube feeding should be particularly targeted for discussions about advance directives.
- Taiwanese nursing homes should have a policy to promote discussions about advance directives, thus increasing their prevalence rate in Asian nursing homes.

## 1. Introduction

Advance directives have been suggested to ensure that critically ill or terminally ill cancer patients in long-term care facilities receive end-of-life (EOL) care consistent with their wishes and to avoid receiving unnecessarily aggressive EOL care (Jones et al., 2011; Mukamel et al., 2013), thus ensuring appropriate EOL care and a more peaceful death (Manu et al., 2015). This approach to EOL care can enhance human dignity and prevent needless suffering from unnecessary treatments, such as cardiopulmonary resuscitation (CPR). For nursing home residents, EOL care is particularly important because they tend to have physical and mental comorbidities that make them frail, are institutionalized for long periods, and often experience repeated hospitalizations (Mukamel et al., 2013). However, no standard definition of an advance directive is available. Advance directives generally include do-not-resuscitate (DNR) directives, physician orders for life-sustaining treatments or assigning a health care proxy to make health care decisions in case one cannot make decisions at EOL (Manu et al., 2015). This definition of advance directive has been adopted in Taiwan (Chuang, 2014) and was the one used in this study.

Advance directives are not a familiar concept in Asian countries, except in Singapore (Ministry of Health and Singapore, 2010). This lack of familiarity is the main reason for advance directives not being commonly used in Asian countries since 31.5–88.0% of nursing home residents in Hong Kong (Chu et al., 2011) and mainland China (Ni et al., 2014) have expressed an interest in advance directives. Furthermore, discussing an advance directive with hospice and palliative-care Chinese patients was shown to be feasible if they had advanced cancer and their families did not object (Wong et al., 2012). Similarly, Korean patients' perceived need for advance directives was influenced by positive attitudes toward comfort-oriented EOL care and hospice/palliative care (Keam et al., 2013).

Although awareness of advance directives is greater in Western countries, the prevalence of signed advance directives in the US varies from 26.3% for adults  $\geq 18$  years (Rao et al., 2014) to 72% for older adults ( $\geq 60$  years old at death; Silveira et al., 2014). Among nursing home residents in the US, advance directive prevalence varies from 65% (Jones et al., 2011) to 87% (Manu et al., 2015), with the most common types of advance directives being DNR directives (56%) and living wills (18%) (Jones et al., 2011). Thus, this report focuses on DNR directives in Taiwan.

In Asian countries such as Taiwan, however, the prevalence of DNR directives among nursing home residents is much lower (16.4%) (Lo et al., 2010) than in the West. Among Taiwanese nursing home residents, factors associated with having a DNR directive were residents' older age, impaired cognitive function, surrogates' previous discussion with physicians about DNR directives, and the nursing home having a DNR policy (Lo et al., 2010). Among these factors, the only ones that can be changed are surrogate-physician discussions about DNR orders and the nursing home policy regarding nursing home nurses initiating discussions about DNR orders.

However, only 20.4% of nursing homes in Taiwan had a DNR policy (Lo et al., 2010). This may be due to DNR directives reflecting the Chinese cultural taboo against discussing matters related to death and the cultural value of filial piety, which makes surrogates

such as adult children reluctant to sign an order that avoids doing everything possible to keep an elderly parent alive (Lo et al., 2010; Wen et al., 2013). These issues lead to DNR directives being signed as late as possible for critically ill Taiwanese patients and a short interval between signing a DNR directive and death for critically ill (Tsai et al., 2007) and terminally ill cancer patients (Wu et al., 2009) in Taiwan.

Furthermore, Taiwanese nursing home residents may be reluctant to sign a DNR directive because they view these institutions as "a temporary home to nurture health" (Tsai and Tsai, 2008), reflecting that residents' main reasons for moving to a nursing home were poor health and having no one to care for them at home. They expected that their health would improve under the care of a professional healthcare team and believed that when their health improved, they would go home (Tsai and Tsai, 2008). The low rate of DNR policies in Taiwanese nursing homes may also be due to DNR directives being a common source of communication conflict between nursing home staff and residents' families in Taiwan. Asking family members to sign a DNR directive at the wrong time may cause communication conflict between staff and family (Tsai et al., 2013). Furthermore, not signing a DNR directive may threaten the continuity of care during transfers to hospital (Terrell et al., 2009), lead to inappropriate EOL care, and a less peaceful death (Jones et al., 2011; Manu et al., 2015; Mukamel et al., 2013).

To ensure appropriate EOL care for Asian nursing home residents, more effective interventions are needed to increase the rate of DNR directives in accordance with nursing home residents' preferences. Designing such interventions requires understanding not only the factors associated with nursing home residents having a DNR directive, but also the best time to sign a DNR directive after nursing home admission and the association between having a DNR directive and residents' mortality. Thus, nursing home managers and nurses need evidence on the best time to approach residents and their surrogates to sign a DNR directive, underlining the need for this study. However, no study has been conducted in an Asian nursing home to understand the process and timing of signing DNR directives and their outcomes. The few studies on the DNR directive process and its outcomes in nursing homes were either conducted >20 years ago or in western settings (Kellogg and Ramos, 1995; Mukamel et al., 2013). These studies found that majority of residents in western nursing homes had DNR directives at admission or within 10 weeks of admission, and that residents with a DNR directive had a higher mortality rate than those without a DNR.

Understanding the wishes of residents or their families regarding DNR directives may be especially important in Asia where people tend to believe that dying at home signifies a good death for the elderly (Tang et al., 2010). However, no study could be found on the timing for Asian nursing home residents to sign a DNR directive or on residents' mortality after signing such a directive. Understanding the association between the timing of signing a DNR order and residents' mortality in an Asian country may provide strong clinical evidence for nursing home policies to increase the prevalence of DNR directives. Thus, the purposes of this study were to understand (1) the timing between nursing home admission and signing a DNR directive, (2) the factors related to having a DNR directive, and (3) the association between having a DNR directive and nursing home residents' mortality in Taiwan.

## 2. Methods

### 2.1. Study design and setting

Data for this retrospective, longitudinal, chart-review study were collected from medical charts of residents at six randomly

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